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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/663,806

09/17/2003

Tamito Kagami

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12/07/2004

SUGHRUE MION, PLLC
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EXAMINER

STEPHENS, JUANITA DIONNE

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 12/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/663,806

Applicant(s)

KAGAMI, TAMITO

Examiner

Juanita D. Stephens

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Application filed 9/17/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,7-9,12 and 13 is/are rejected.
- 7) ☒ Claim(s) 3-6,10,11 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/27/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. Claims 10-11, and 14 are objected to because of the following informalities:

In claim 10, line 4 replace "timing signal generation means" with --a timing signal generation means--.

In claim 14, line 2 replace "the tip" with --a tip--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 7-9, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-230608 in view of Minemoto et al. (US 6,172,693 B1).

JP 10-230608 discloses an ink jet recording method and an ink jet recording unit (Fig. 1) comprising: 1) ink guides (10) each of which is arranged in an ink channel to feed ink (9) in a form of a dispersion of charged colorant particles in a solvent, has a tip (ink drop flight position 14) protruded from an ink level in said ink channel, and guides the ink to the tip to agglomerate the colorant particles to eject the ink having the

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agglomerate colorant particles (as shown in Fig. 1), 2) ejecting electrodes (control electrodes 6) each of which is positioned between the ink level and the tip of each of said ink guides in a height direction of said ink guides and is provided in close proximity to each of said ink guides (as shown in Fig. 1), 3) voltage application means which applies to said ejecting electrodes a high voltage pulse which is identical in polarity with said charged colorant particles to thereby allow the ink containing the colorant particles agglomerated at the time of each of the ink guides to be ejected (paragraph 0018, line 9-12), 4) ejecting the ink (9) from the tip of each of said ink guides so that the ink flied onto a recording medium (19) is adhered to the recording medium for recording (paragraph 0020, lines 7-9). JP 10-230608 further at least teaches that the ink is supplies between the head substrate and the insulating substrate, and is collected from the ink rotary flow mechanism 4 containing a pump (not shown).

JP10-230608 does not explicitly teach 1) shaking means which shakes the ink guided by said ink guides, 2) operation control means which controls an operation of said shaking means, 3) wherein said shaking means is provided so that an ink shaking direction conforms to an ink ejecting direction, 4) wherein said operation control means applies to said ejecting electrode an ejecting voltage above a predetermined value required to eject the ink from the tip of each of said ink guides in an ejection period, and applies to said shaking means a shaking voltage below the predetermined value at which the ink is ejected in a non-ejection period except the ejection period so as to shake the colorant particles at the tip of each of said ink guides, 5) wherein, while the ink having the agglomerated colorant particles is ejected from the tip of each of said ink

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guides at predetermined intervals, said operation control means applies an ejecting voltage to said ejecting electrode as well as shakes the ink having the agglomerated colorant particles at the time of each of said ink guides so as to eject the ink having the agglomerated colorant particles from the tip of each of said ink guides, and 6) wherein, while the ink having the agglomerated colorant particles is ejected from the tip of each of said ink guides at predetermined intervals, said operation control means applies to said ejecting electrode an ejecting voltage above a predetermined value required to eject the ink from the tip of each of said ink guides in an ejection period, as well as keeps continuously applying to said shaking means a shaking voltage below the predetermined value at which the ink is ejected in the ejection period and a non-ejection period except the ejection period, thus continuously shaking the colorant particles at the tip of each of said ink guides, and 7) shaking the colorant particles at the tip of each of said guides to agglomerate the colorant particles at the tip of each of said ink guides in preparation for a subsequent ejection of the ink. Minemoto et al. at least teaches shaking means (stirring electrodes 105 and 106) which shakes the ink guided by said ink guides (col 3, Ins 57-59), operation control means (stirring electrode control section 107 via control unit 114) which controls an operation of said shaking means (col 3, Ins 57-59), wherein said shaking means is provided so that an ink shaking direction conforms to an ink ejecting direction, wherein said operation control means (ejecting electrode control section 103 via control unit 114) applies to said ejecting electrode an ejecting voltage (col 3, Ins 59-61) above a predetermined value required to eject the ink from the tip of each of said ink guides in an ejection period, and applies to said shaking

means a shaking voltage below the predetermined value at which the ink is ejected in a non-ejection period except the ejection period so as to shake the colorant particles at the tip of each of said ink guides (col 3, ln 62-col 4, ln 10), wherein, while the ink having the agglomerated colorant particles is ejected from the tip of each of said ink guides at predetermined intervals, said operation control means applies an ejecting voltage to said ejecting electrode as well as shakes the ink having the agglomerated colorant particles at the time of each of said ink guides so as to eject the ink having the agglomerated colorant particles from the tip of each of said ink guides (col 3, ln 62-col 4, ln 10), wherein, while the ink having the agglomerated colorant particles is ejected from the tip of each of said ink guides at predetermined intervals, said operation control means applies to said ejecting electrode an ejecting voltage above a predetermined value required to eject the ink from the tip of each of said ink guides in an ejection period, as well as keeps continuously applying to said shaking means a shaking voltage below the predetermined value at which the ink is ejected in the ejection period and a non-ejection period except the ejection period, thus continuously shaking the colorant particles at the tip of each of said ink guides, and shaking the colorant particles at the tip of each of said guides to agglomerate the colorant particles at the tip of each of said ink guides in preparation for a subsequent ejection of the ink (col 3, ln 62-col 4, ln 10). It would have been obvious at the time the invention was made to a person having ordinary skill in the ink jet art to substitute the ink rotary flow mechanism of JP 10-230608 with the stirring electrodes as taught to be old by Minemoto et al. for the

purpose of obtaining a stable operation of the ink jet recording head and an excellent image quality, while avoiding blocking of the ink slit.

5. Claims 3-6, and 10-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 4 will be allowed when claim 3 is rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 11 will be allowed when claim 10 is rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

The limitation of wherein said shaking means is a self-vibrating body arranged in close proximity to said ink guides and transmits vibration to said ink guides to vibrate said ink guides thereby shaking the ink guided to said tip of each of said ink guides, recited in claim 3. This invention solves the problem of preventing adhesion of colorant particles to the inner wall of the ink guide and removing the caked-on colorant particles.

The limitation of wherein at least part of each of said ink guides comprises a self-vibrating body and the tip of each of said ink guides is arranged as said shaking means, recited in claim 5. This invention solves the problem of preventing adhesion of colorant particles to the inner wall of the ink guide and removing the caked-on colorant particles.

The limitation of wherein said shaking means is a vibrating body arranged in said ink channel in close proximity to said ink guides, recited in claim 6. This invention solves

the problem of preventing adhesion of colorant particles to the inner wall of the ink guide and removing the caked-on colorant particles.

The limitation of wherein said operation control means comprises a radio frequency power supply which applies a radio frequency power to said shaking means and timing signal generation means which generates a timing signal to operate said radio frequency power supply, recited in claim 10. This invention solves the problem of preventing adhesion of colorant particles to the inner wall of the ink guide and removing the caked-on colorant particles.

7. Claim 14 would be allowed after corrections as identified in the "claim objection" section is made.

8. The following is a statement of reasons for the indication of allowable subject matter:

The limitation of filling said ink channel with a cleaning solution and shaking said cleaning solution to clean said ink guides. This invention solves the problem of preventing adhesion of colorant particles to the inner wall of the ink guide and removing the caked-on colorant particles.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juanita D. Stephens whose telephone number is (571) 272-2153. The examiner can normally be reached on Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Juanita Stephens", with a stylized flourish at the end.

December 2, 2004

Juanita D. Stephens
Primary Examiner
Art Unit 2853